



El Niño Southern Oscillation and Leptospirosis outbreaks in New Caledonia

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Abstract:

Leptospirosis is an important cause of seasonal outbreaks in New Caledonia and the tropics. Using time series derived from high-quality laboratory-based surveillance from 2000-2012, we evaluated whether climatic factors, including El Niño Southern Oscillation (ENSO) and meteorological conditions allow for the prediction of leptospirosis outbreaks in New Caledonia. We found that La Niña periods are associated with high rainfall, and both of these factors were in turn, temporally associated with outbreaks of leptospirosis. The sea surface temperature in El Niño Box 4 allowed forecasting of leptospirosis outbreaks four months into the future, a time lag allowing public health authorities to increase preparedness. To our knowledge, our observations in New Caledonia are the first demonstration that ENSO has a strong association with leptospirosis. This association should be tested in other regions in the South Pacific, Asia or Latin America where ENSO may drive climate variability and the risk for leptospirosis outbreaks.

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Resource Description

Early Warning System:

resource focus on systems used to warn populations of high temperatures, extreme weather, or other elements of climate change to prevent harm to health

A focus of content

Exposure :

weather or climate related pathway by which climate change affects health

Ecosystem Changes, El Nino Southern Oscillation, Precipitation, Temperature, Other Exposure

Temperature: Fluctuations

Other Exposure: sea surface temperature

Geographic Feature:

resource focuses on specific type of geography

Ocean/Coastal

Geographic Location:

Climate Change and Human Health Literature Portal

resource focuses on specific location

Non-United States

Non-United States: Australasia

Health Impact: 

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Foodborne/Waterborne Disease

Foodborne/Waterborne Disease: Leptospirosis

Mitigation/Adaptation: 

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology: 

type of model used or methodology development is a focus of resource

Outcome Change Prediction

Resource Type: 

format or standard characteristic of resource

Research Article

Timescale: 

time period studied

Short-Term (

Vulnerability/Impact Assessment: 

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content